Claims

1. A pharmaceutical agent comprising

- one or more genetic materials, not encapsulated or encapsulated in PEG-, immuno-, immuno/PEG-, cationic, optionally polymer-modified liposomes,
- lyophilized or degradable starch particles and/or gelatin and/or polymer particles, such as nanoparticles and
- iodine-, gadolinium-, magnetite-or fluorine-containing contrasting agents.

2. The agent of claim 1, wherein DNA, RNA, ribozyme and/or antisense oligonucleotides are contained as genetic materials.

3. The agent of one of the claims 1 or 2, wherein therapy genes, such as suicide genes, cytokin genes, chemokin genes (MIP1α, MCP), antiangiogenesis genes, such as vascular endothelial growth factor (VEGF), apoptose genes, such as apoptin, natural born killer (NbK), optionally in combination with marker genes, such as green fluorescence protein (GFP), galactosidase gene (LacZ) under optionally inducible, optionally tissue-specific promoters, are contained as genetic materials.

4. The agent of claim 3, wherein the proteins, which packs DNA more tightly, such as nuclear capsid protein (NCP 7), HMG and/or synthetic substances, such as polyethylene imine, poly-L-lysine or protamine sulfate, are contained in addition.

5. The agent of one of the claims 3 or 4, wherein the agent contains the suicide genes, herpes simplex virus thymidine kinase gene (HSVtk), deaminase gene, NR/CB1954, pyrine nucleoside phosphorylase and/or the cytokinin genes IL-2, IL-4, IL-6, IL-10, IL-12 and/or IL-15.

6. The agent of one of the claims 1 to 3, wherein the liposomes consist of

a) a natural, semi-synthetic or completely synthetic amphiphil,

b) a steroid,

c) a charged lipid component,

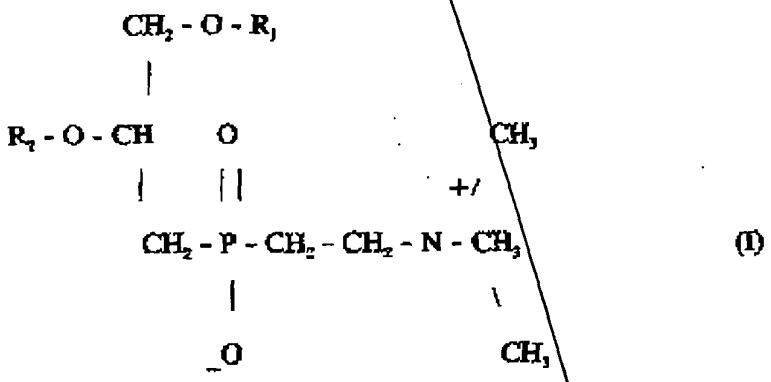
d) the water-or lipid-soluble genetic material and/or

e) a carrier liquid and optionally additional inert materials.

7. The agent of claim 6, wherein the quantitative ratio of a to b to c preferably is in the molar ratio of 1 : 0.3 : 0.1 to 1 : 1 : 0.1 or 1 : 1 : 0.5 and the molar ratio of c to d is 2 : 1 to 10 : 1.

8. The agent of claims 6 or 7, wherein the natural, semi-synthetic or fully synthetic amphiphil preferably is a lipid, a surfactant, an emulsifier, polyethylene glycol (PEG) or lipid-PEG

9. The agent of claim 1, wherein the amphiphil is a compound of the general formula I



(I)

in which R_1 and R_2 represent C_{10} to C_{20} alkanoyl, alkenoyl, alkyl or alkenyl.

10. The agent of one of the claims 6 to 9, wherein the steroid is cholesterol, diethoxycholesterol or sitosterol.

11. The agent of one of the claims ~~6 to 10~~, wherein the charged lipid component is the anion of diacetyl phosphate, of palmitic acid or of stearic acid, the anion of a phospholipid, such as phosphatidyl serine, phosphatid acid or the enzyme of a sphingolipid, such as sulfatid, or polyethylene glycol (PEG), such as MPEG-DSPE.

12. The agent of claim ~~11~~, wherein the charged lipid component is fluorinated.

13. The agent of one of the claims ~~6 to 12~~, wherein polymer particles in the form of a 25% aqueous solution of Poloxamer are used as additional inert materials.

14. The agent of one of the claims ~~1 to 13~~, wherein the genetic materials are present in

- SUV (small unilamellar vesicles) PEG liposomes,
- LUV (large unilamellar vesicles) PEG liposomes,
- REV (reverse phase evaporation vesicles) PEG liposomes,
- MLV (multilamellar vesicles) PEG liposomes,
- anti-Ki-67-immune PEG liposomes,
- anti-CEA PEG liposomes or
- PEG DAC-Chol liposomes.

15. The agent of one of the claims ~~1 to 14~~, wherein the starch particles, lyophilized, are present in a size of 40 - 90 µm and are in a physiological salt solution in a concentration of 5 to 70 mg/mL.

16. The agent of claim 15, wherein the starch particles have a particle size of 60 to 90 µm.

17. The agent of one of the claims 1 to 16, wherein absorbable gelatin powder is contained.

18. The agent of one of the claims 1 to 17, wherein the agent contains phenyl derivatives with one or more iodine substituents as iodine-containing contrasting agent.

19. The agent of claim 18, wherein the agent contains Iopromide, Ioxitalamate, Ioxaglate, Iopamidol, Iohexol, Iotralon, Metrizamide or Ultravis.

20. The agent of one of the claims 1 to 19, wherein the agent contains fluorinated lipids as contrasting agent.

21. The agent of one of the claims 1 to 20, wherein the agent contains 30 to 90 mg of lyophilized or degradable starch particles and 5 to 100 mg of genetic material, which is or is not encapsulated.

22. The agent of one of the claims 1 to 17 and 20 to 21, wherein the agent contains

- the LacZ marker gene and the pUT HSVtk suicide gene,
- encapsulated in MLV PEG,
- as starch particles, Spherex or Gelfoam and
- a fluorinated contrasting agent.

23. A method for producing an agent of one of the claims 1 to 22, wherein 30 to 90 mg of lyophilized or degradable starch particles and/or gelatin and/or polymer particles are dissolved in 3 to 6 mL of contrasting agent and, subsequently, the therapeutically necessary amount of genetic material is added.

24. A method for producing an agent of one of the claims 1 to 22, wherein the therapeutic amount of a genetic material and optionally a complexing agent are dissolved in one or more lipids and mixed with the starch particles and a contrasting agent.

25. Use of an agent of one of the claims 1 to 22 for gene transfer and gene therapy, especially for the treatment of liver metastases, tumors of the lung, bladder, head and neck, urogenitals, lymph nodes, breasts, in the case of glioblastoma, arthritis and asthma.

26. The use of claim 25, wherein the agent is used for local gene therapy.

27. The use of claims 25 or 26, wherein the agent is used for the intraarterial therapy of liver metastases.

28. The use of an agent of one of the claims 1 to 22 for the treatment of neurodegenerative and autoimmune diseases.

29. The use of claim 28, wherein the agent is used for Parkinson's disease, Alzheimer's disease and multiple sclerosis.

30. The use of claim 28, wherein the agent is used for diabetes type I.

31. The use of an agent of one of the claims 1 ~~to 22~~ to accompany transplantations.

32. The use of an agent of one of the claims 1 ~~to 22~~ for the treatment of restenosis.

33. The use of claim 32, wherein the agent is used for high blood pressure.